THE

SOUTHERN AGRICULTURIST.

FEBRUARY, 1829.

PART I.

ORIGINAL CORRESPONDENCE.

ART. I.—*On the necessity of Agricultural Education, being bestowed on those intended for Superintendants of Plantations, and the benefit which would arise from proper encouragement being held out to respectable youths, to engage as such; by* A WELL-WISHER *to Agriculture.*

[COMMUNICATED BY THE SOUTH-CAROLINA AGRICULTURAL SOCIETY.]

(Continued from page 7.)

Having pointed out what I regard as the principal obstruction to our Agricultural improvement, I will now respectfully submit a plan which may contribute to great Agricultural reform. I must premise that the plan is imperfect but still it may form an outline for some better one.

The *Agricultural Society of South-Carolina,* should establish a School, to be called the *Agricultural Institute,* to be regulated as follows:—

1st. There should be a Lecturer on Mechanics and Mechanical Philosophy, to understand which the Student should previously be acquainted with Mathematics—a knowledge of these subjects is important in laying out lands, banking, draining, &c.

2d. A Lecturer on Agricultural Chemistry.—From him a knowledge of different soils and manures, and the soils appropriated for certain manures (a very important part, certainly, of Agricultural knowledge) would be obtained.

3d. A Teacher, who should demonstrate practically the principles pointed out in the foregoing Lectures, as well as give a history of different domestic animals, and the manner of keeping and raising them, &c. For this purpose a farm contiguous to the city might be obtained by the individual undertaking this duty.

The lectures to be delivered in the Summer months, and the lecturers to receive a specific sum from each pupil. In the Winter it should be required of those who belong to the Institute, to place themselves under some judicious Agriculturists, there to learn the management of the labourers, and all the details and operations of a plantation. After a certain period of time, if the pupils have given satisfaction, a Licentiate of Agriculture should be granted them, which would give character and standing to those intending to become superintendants of plantations, and wipe away the *odious and invidious name of Overseer.*

In the Summer months, it is well known that young men, the sons of Planters, are perfectly idle in our city, and I appeal to your good sense, if it would not be better to be employed in this manner, than in dissipation and extravagance which idleness always begets. The idea of an Agricultural education is by no means novel. In all countries where agriculture is in a high state of improvement, it is studied scientifically, as well as practically. Nothing is more common than for young men, sons of wealthy landholders, to be placed under farmers in Scotland, to learn the art. There is a professorship of Agriculture in Edinburgh, and you know Sir Humphrey Davy, one of the first Chemists of the age delivered lectures on Agricultural Chemistry, to the Board of Agriculture. I have long looked at the various works on Agriculture, and let me ask you, how are they to be understood, or their principles applied, unless a preparatory education be obtained? If an Agricultural School, properly regulated, could be established, it would produce a greater and more important improvement in the character and prosperity of Carolina, than any other means I know of. To our city the advantages would likewise be great. I know it will be asked, how are lecturers to be

obtained—how funds—and a thousand other objections which are always brought up in full array, when any thing novel is proposed.

The question for you to consider is, whether, supposing such an institution to be established, it would contribute to correct in any manner the evils which I have pointed out; and if you are satisfied it would, then you can look to the means. On this point I shall not say much. As regards funds, I would not insult the patriotic feelings of the Agriculturists of Carolina in believing they would not contribute abundantly to the establishment of a School, if they believed it would contribute to public good. Of the *Lecturers*, establish the Institution, and you will quickly find men of talents to occupy these situations. Enterprizes of this kind beget talent, and on this score there need be no apprehension.

I beseech you, Gentlemen, think well on this subject before you give it up altogether. Your country expects much of you. Our Agricultural interests are now in a state requiring great reformation and improvement. Our Overseers, generally speaking, are ignorant, immoral, and unworthy of confidence; and many of our young men are dissipated and idle because they have no means of employment. If you can correct the evils which I have presented to you, you would do more than all your premiums can effect in a century.

That there will be many difficulties which will present themselves admits of no doubt. But when was any thing of importance established without there being great difficulties to overcome; the greater, however, the difficulties, the more noble and praiseworthy the overcoming of them. If we were to look to the dark and gloomy side of every enterprize, our ardor and enthusiasm would be paralized, and there would be an end to all improvement. The great man in his progress forgets all difficulties, or remembers them only to devise the means of overcoming them. Satisfied with the importance and usefulness of an object, he enters upon it with a firm, persevering, and steady resolve, and makes things seemingly impossible, yield to his untired exertions and energy.

I have thus, Gentlemen, briefly laid before you my crude views upon a subject of great magnitude and importance to the welfare of our State. Perhaps these hints may lead to

some more practicable plan. Perhaps they may be regarded as visionary.

Be the merits of the proposed remedies what they may, that the evils exist no one can doubt, and I solemnly assure you, I am interested in no other way than by a desire to add my humble mite for the improvement and happiness of our common country.

A WELL-WISHER TO AGRICULTURE.

ART. II.—*On the Cultivation of Indian Corn; by* A PLANTER.

Dear Sir,—In my last* I stated that the same principle was to be applied to the culture of Corn and Cotton, and almost every plant—which was to pulverize the earth and make it fine and deep near the plant when young, for its first roots to pass into in search of food, and to continue this culture, cutting the roots which renew themselves till the bearing stage, when they should not be cut, as they have not time to renew and perfect the fruit. This stage in Corn is when it shoots to tassel and put out the ear; in Cotton when fully in blossom; and in small grain when it pushes out the grain. To an ordinary observer, it is apparent what exertion the plant then makes, you may see the growth from day to day, and on the fine tilth of your soil, and the rain at this particular juncture, depends the productiveness of the crop. If this be true, and examine it by your own experience till you are satisfied it is so, then make your practice conform to it, and change your ploughs and your mode of using them, so as to carry it into effect. I would plant Corn early, and deep, and many grains in a hill;—early that it might have its first working before Cotton needs it, and because it bears drought better, will wait longer for rains to perfect the grain, makes a heavier crop, and thicker and better fodder;—deep because more out of the reach of

* Essay on the best mode of setting a crop in the middle country, (see vol. i. p. 526) The signature was inadvertently omitted. An error also occurred in the last part of that communication, "The latitude of Virginia is more suited to Corn than Rice," read "than here."

crows, and safer from the effects of frost;—and many grains in a hill because it has more enemies in its infancy; for the same reason I would thin late so as to ensure a stand; I would give it great distance one way as it makes a surer crop, is easier to attend, and gives more room for Peas. On such lands as you expect ten or fifteen bushels per acre, I would put about two thousand five hundred stalks; on the richest land less than four thousand. Every hundred stalks ought to yield one bushel. I would extend the manure over the land at the rate of one wagon load of Cotton seed, or four of compost manure on the acre, believing that ten loads so used would yield more Corn than if all applied to one or two acres, and the rest without. It would be very satisfactory to know the result of General Pinckney's farther experiments on this subject; a Gentleman who has been to this State, what Arator was to Virginia. I would keep the seeds with all care through the Winter, and would kill them only after the Corn was in the ground, because I believe the manure from them is of short continuance in such small quantities as we generally use them, and at any rate that their most powerful effects are over before the critical period when the Corn needs all aids, say when it is perfecting the grain. I saw seed in 1815, that was rotted when the Corn was planted, show surprising effects on its growth, and that gave out, before the Corn was made. Seed that sprouts have also lost most of its oil in pushing out the plants. The best state if practicable would seem to be, to mash the seed so as to destroy the vegetating principle, and to apply it at the first moulding. The nearest to this object of any mode I have practiced has been to put a bushel or more of water in each pile or wagon load as it stands in the field, and a hoe full of dirt after it to retain the moisture and heat the pile, which heat you will feel sensibly to the hand in three days, and after ten or twelve days continuance, will destroy the vegetating principle. I would put the seed on the Corn, before the first moulding, as you then have time to spare: in May and June nothing should remain to do, that could be done before, and no labour applied but such as goes directly to increase the crop. I would not lessen what a hoe can go over in the day by breaking clods, as your harrows can do that better on a wet day. Your Corn being planted deep and wide, and the seed on, at the rate of a pint to the hill, I

would run a bull-tongue or small shovel plough as close to the Corn as possible, not to cover it; or the smallest sized Freeborn plough, with the bar side to it, and fill that furrow with a larger plough, and plough out the baulk in full, because you then have the time, and it helps to make the land plough better at the last ploughing; if the land be stiff or out of order, I would full-plough it every time, because every one is necessary to reach the perfect tilth you want at the "laying-by." If your land be light, I would run two or four furrows near the Corn, and leave the alleys to be put in order at the last ploughing; if it becomes grassy I would run a cut or two with some broad cultivator, so as to destroy the grass merely. When your lands are once well broken, and not grassy, no instrument is better than the coulter-footed harrow, that will cut from two to two and a half feet at a time, they give you so much expedition, that they put your crop very much under your command; scrapers or skims, that cut about the same, are better if your lands are light, but grassy, as they cut what the harrow sometimes passes by. At the laying by, use plough or harrow, or what puts your land in best order, and with your hoes draw a broad flat hill, or rather bed to your Corn, and if to do so it takes all the loose earth out of the alleys or rows, you must run one or two bouts of the harrow after the hoe, so as to make fine earth for the small roots of the Corn to pass through, which they will, to the space of ten feet or more. You have now done your part, you must leave the rest to Him who gives the increase.

A PLANTER.

N. B. The experiment tried by Mr. Bellinger, of making a crop of Corn with breaking up the alleys but once, I tried on the year he did, and it did well on thin light land, but is liable to the objection that it requires more and better work at the laying by than you have time to give it, that being your busiest season.

ART. III.—*On the Cultivation of the Sugar Cane, Erecting of proper Buildings, and Manufacturing of Sugar; by* THOMAS SPALDING, *Esq.*

Dear Sir,—I have received your letter of the 25th November, and will reply to it as far as I am able, upon the Cultivation of Sugar Cane, and other objects in Georgia.

In the year 1805, I began the cultivation of Sugar Cane with 100 plants; I had long before that been impressed with the opinion that it would answer as well in Georgia as Louisiana, for one of my early friends, the late Mr. John M'Queen of Savannah, had spent the winters of '96, '97 in Louisiana, and had stated among other circumstances that the Orange trees were killed to the root, in that winter, and as I knew there was growing all around me Orange trees that had been planted by the soldiers and followers of General Oglethorpe, I concluded without a doubt upon my mind, that the climate of Georgia and South-Carolina was better than the climate of Louisiana, because this *test by plants*, was a more certain one than any test that the thermometer could afford, and this I believe to be the opinion of enlightened Agriculturists in Europe and America. My progress to successfulness was obstructed by the non-importation act, by the embargo act, and finally by war, up to the year 1814. My Sugar works, in consequence of these obstructing causes, were very costly, though of a very common character; in the year '14 however, my crop of Sugar amounted to $12,500, from the labour of fifty slaves; the next spring brought peace with it, and my neighbours Major Butler, Major Wood, and others, became cultivators of Sugar. Many causes have heretofore prevented its more rapid extension. Cottons at first were high; Rice has lately borne a high price. The various difficulties which the agricultural interests have encountered, have, in most instances, impoverished them. It was not for men who were in debt to risk any thing in experiment, still, however, the plantations at the mouth of the Altamaha, have been a source from whence the Cane plants have spread into the interior country of Georgia, and into Florida, every acre of Cane grown in Florida, has been derived

from that source, and I presume I shall not exaggerate it, when I say to you, that between Darien on the Altamaha, and Milledgeville on the Oconee, and Macon on the Oakmulgee, there are at this moment more than one hundred plantations upon which Sugar Cane is grown, and where Sugar is manufactured in more or less quantity. Five years ago, I commenced the cultivation of Sugar Cane, on river swamp land opposite to Savannah; the year 1824 was a year of great loss to the country generally, and to myself in particular. I had growing on the Savannah river sixty acres of Cane, which I am quite satisfied ought to have given me in the year 1825, sixty thousand weight of Sugar. My losses of the previous year prevented my procuring a steam-mill to grind it; I put up temporary works, which, while they satisfied myself of the productiveness of the Sugar Cane in that situation, equally satisfied me of the necessity of an extensive establishment, to make the culture of Cane profitable on river lands. From that time, therefore, I have kept a few acres in constant cultivation. That I might in the first place be master of my own means, at my own convenience, and again that my plantations near Savannah might furnish plants to all who might desire to go into the cultivation of the Sugar Cane. This it has done, and it will not perhaps be exaggeration either, to say, that in the coming year, there will be an hundred ptantations upon the Savannah river, on which Cane will be grown in greater or lesser degree.

All doubts as to the importance and value of the Sugar Cane in Georgia has now passed away; one acre of Cane, as plants, has been recently shipped from Savannah to North-Carolina, where it will no doubt plant from ten to fifteen acres.

But there is a point at which it must stop, for there is a point we are told, by Chaptale, and other Chemists, where the Sugar Cane growing large and looking well, will produce an abundance of the molasses sweets, but not a sufficient quantity of the sacharine sweets, which are of course, the most valuable; to make the cultivation profitable—you see much from time to time in the newspapers upon Cane growing large and looking well, and being ripe for so many joints, these are all idleisms, it is difficult for the most experienced eye to decide when Cane will make good Sugar, and when its juices may be too weak, but Baumee's Hy-

drometer, mentioned in the letter, which you published in your December number, (has marked upon it a scale, in which water is the unit, and the richest syrups, stand at forty degrees,) will at once decide the question, for when that hydrometer shews the juices to stand at seven, the syrups may be made to granulate, below that, they will not, the juices sometimes with us reach eleven, and will then make a very fine Sugar, at one pound to three quarts of juice, which is as high as they ever arrive at in Jamaica, according to Bryan Edwards.

I thought that my letter, which you recently published, contained all the information if carefully read, which was necessary either in the planting, in the cultivation, or in the manufacturing of Sugar; in truth, with proper machinery, no cultivation or no manufactory can be more simple, the plough and the hoe are equally applicable. In the West Indies they make deep holes at an expenditure of from forty to sixty days' labour upon the acre; this system must have been as bad as it was expensive. The ridge husbandry in our own country is found preferable to any flat cultivation, yet what is strange, it has been but recently introduced into Europe, and it is not therefore wonderful that it was not known in the West Indies. In Louisiana they generally employ the plough, to throw up ridges, at from four to five feet apart, they then split the ridge with the plough, and lay in the cane, one or two plants along side of each other through the whole trench; this planting is performed at any period, as my former letter stated between October and March, avoiding the cold days of December and January, which might injure the eyes of the plant between the time of their being taken out of the ground, and returned into it. If the plants are put under the surface of the soil, a single inch, they will be protected from the cold; if the weather is warm during the winter or spring, they often shoot up above the surface, but it is nothing but spiral blades, and they may be cut down by frost a dozen times without the smallest injury to their ultimate growth. The best cane I have ever had, was planted the last of October; but, in truth, we cannot spare time before we have disposed of one crop, to plant another, and therefore the planting is generally accomplished in January and February. The first weeding of the Cane should be done carefully by the hand, picking the grass

out, as the negroes are a little liable if they use their hoes to cut and disturb its growth. The planting, from the quantity which is employed, is in some degree laborious, taking two hands with me, generally, to the quarter of an acre, to trench the land after it has been ridged, to bring the Cane plants from where the carts may deposit them, to lay the seed in the trenches carefully, with the eyes horizontal, and to cover it with the appropriate depth of soil; but the advantage is, once planted, you are done for the season; no worms, no frost, no wind, disturb your young crop. From what I have seen; although I use the hoe in weeding, I would prefer the plough, as they exclusively use it in Louisiana. Your crop should be laid by in the month of July, the Cane does not grow much until the rains of August set in, and it is all-important, that it should be quite clean, that it may receive the full benefit of those rains, I have known it to joint a foot a week during the month of August, when there had been scarcely a joint visible in the month of July. There was a practice in the British Islands of stripping the blade from the plants as they grew; this was not done in St. Domingo, among the French cultivators—it is not done in Louisiana—it is not done in India, where, on the contrary, they as much as possible secure the blades around the plants to protect them from the influence of the sun, which is liable, if the plant is bruised in any way, to acidulate it. I think the blades are important in this country to protect the plant from the cold winds which sometimes take place in November, and to protect them from the influence of the morning sun, after a frost. The only possible benefit which can result from stripping the blade, or trashing, as it is called in the West Indies, is, that of saving labour in the harvest; but that advantage I conceive would be too dearly purchased from the increased danger by cold. You will distinctly understand that the expense of cultivation after planting is not greater than that of Cotton, whether the plough or hoe is used, but the great difficulty is to bring in the Sugar Cane from your fields to your mill-house: whether carts upon high land, or canals on river-swamp are employed, the labour in both instances is great for a short time. An acre of prime cane, will furnish your mill with thirty tons of plants for grinding—to cut down this cane, to strip the blades, to cut off the upper top, to carry it wherever your carts or

your flats may be, will, in the general, take twenty prime hands, besides those who may be employed in flatting or attending to your carts, and those who may be attending to your mill and your boiling-house; you may judge therefore, at this rate, that it would take fifty labourers to take off one hundred acres of Cane in the two months of November and December, and to grind and manufacture it. In Louisiana the same number of hands would cultivate two hundred and fifty acres, of which, however, one hundred acres would be Ratoon Cane; they have a resource in Louisiana which we do not possess, a number of hardy Spaniards who are employed upon all of the plantations with their own teams, and who carry in the Cane to the mill-house, still I conceive the negroes in Louisiana are too severely worked, there are too many men upon their plantations, and as far as I saw, they were declining in numbers, and sinking in strength, but this arose in a great measure from the necessities of the Planter, who is active and energetic, and in the general, no more spares himself than he does his slave. It was certainly not because Sugar Cane was the crop, but because the Planter had, perhaps in the beginning been mistaken in his means, and was making manly efforts to relieve himself. Where the culture of Cane is confined to two acres to the hand, with some accompanying crop, the negroes unquestionably prefer it to any other culture in our country: they appear to me, as far as I can judge from my own, to enjoy more health, and to multiply faster than they did before I introduced Sugar Cane among them, and this is reasonable, for every man, woman and child, upon the plantation, is feeding upon the sweets of the cane for three months in the year. All apprehensions arising from injury to our Slaves, from an adoption of this culture should cease, all that is necessary is, that we should limit the quantity that we cultivate to two acres to the hand, and combine it with a proportionable crop of Cotton, which improves and prepares the soil for Cane—with Indigo, which would also be a good preparatory crop for Cane, and the harvesting of which is over by the first of October, and which would therefore leave the whole of your labourers on the plantation applicable to your Sugar crop, at the time that they were required;—or Rice, which combines well with Cane, because you have leisure, for planting, and for reaping your Rice, without interfering with the planting your cane, or manufacturing your Sugar.

I feel that at every step of this letter I am but repeating what I have heretofore written, but I am anxious to be distinctly understood, and will therefore go on to say something of the probable cost of preparation for the manufactory of Sugar. On high lands, where persons have pasturage in abundance, and do not contemplate going beyond one hundred and fifty acres of Cane, I conceive a Cattle-mill quite sufficient, the cost of which, with kettles, and every thing that may be required, at New-York, will be from fifteen hundred to two thousand dollars; the buildings required for this establishment, will be a Mill-house of about forty feet in diameter, either of wood, brick or tabby, a Boiling and Curing House connected together, of about eighty to one hundred feet in length, and from twenty-five to thirty feet wide: this house should certainly be of brick, or tabby, as well to protect it against fire, as to preserve a warmth within your Curing House, to facilitate the running of your Molasses from the Sugar, but the walls of this house do not require to be above ten feet high. The cost of such buildings your readers can as well judge of as I can, as it will depend upon their particular situation.

Where it is the intention of persons to go extensively into the cultivation of the Sugar Cane, that is, of several hundred acres upon swamp land, I certainly would recommend a Steam Engine for the grinding it, and to enable your readers to judge upon the subject, will extract what follows, from a Note of Fawcett and Preston, of Liverpool, the greatest Sugar-mill workers in the world, to a friend of mine, whom I had desired to inquire of them their prices: "The dimensions of the rollers they apply to a mill of four horse power, are thirty-six inches long, and twenty inches diameter; to a six horse power, forty-two inches long, and twenty-two inches diameter; of an eight horse power, forty-eight inches long, and twenty-six inches diameter. Mr. Molyneaux's friend will observe the dimensions of the rollers applied to an eight horse power are considerable. The price of a non-condensing Engine, of four horse power, with communicating machinery, is £500; of a six horse, £650; and of an eight horse, is £800."

The wording of this extract leaves doubt upon my mind whether the Mill is included or not. I am told by another friend, that the Boiler is not, if this impression is correct, the six horse power Engine, with Rollers and Boiler, would

cost £800; the eight horse power, with Rollers and Boiler, would cost £1000 in England, to which we must add twenty-five per cent. of duty. The cost of an eight horse power Engine in New-York, with Mill, &c., would, I understand, be $4000, at the West Point foundery, and perhaps would not exceed, in real power, the six horse power of Liverpool, nor, although good and strong, would it equal it in workmanship.

The buildings necessary where steam power is employed for grinding, would not exceed in expense the buildings which are necessary for a Cattle Mill; a double set of Boilers, which are requisite for security in either case, would not cost now in New-York, or if imported from abroad more than $800, and in taking into estimation the expense of a Sugar Establishment, your readers will remark, that the materials employed are either Iron or Copper, and not subject therefore to decay. Some repair may be necessary, but the great mass of material, will continue for many years to be useful.

What may surprise you not a little is to know, that although Sugar has been cultivated as a crop for hundreds of years in the West Indies, and for thousands of years in India, that neither in the one quarter or the other, had the hydrometer been applied to measure the quantity of sweets contained in the Cane, or the thermometer been applied to measure the degree of the heat of the boiling syrup. It was the eye alone that was to determine the ripeness of the Cane, and it was the eye and the touch alone, that was to determine the point at which the Syrup was sufficiently boiled to granulate; experience and individual judgment were alone relied upon, and we well know how variant and how little faith can generally be placed in either. The French Chemists however, when engaged in the cultivation of Beet, and of manufacturing Sugar from its juices, soon learned to employ unerring and unchanging guides to both operations; it is all-important to the Planter, that he should know the quantity of sweets contained in his Cane juice, for upon that quantity depends the quantity of lime he should employ to granulate his Sugar, as well as in some degree to determine him, in the quantity of boiling he will bestow upon it; when the juices, by the hydrometer, stand at eight degrees, we put a pint of lime to an hundred gallons of juice, and we boil by my thermometer, to two hundred and

fifty-two degrees; when the juices rise to ten, we put very little lime indeed, not above one half pint, and then boil up one or two degrees beyond this point, when the Sugar chrystalizes into large cubes, almost like candy; but here it is proper for me to remark to you, that every man must test his own thermometer in his own kettles, for as the tube of quicksilver is raised above the boiling Syrup, the form and depth of his kettles, will materially affect the column of quicksilver that is above the Syrup; the boiling points I have therefore given, suit my own establishment, and will serve as points of approximation for every other, each individual however, must experiment with his thermometer, cautiously, and step by step, until he has found the point by his own instrument, at which he makes good Sugar, he has then only to mark that point upon the wooden part of his thermometer, and every negro boiler in his establishment, by watching the rise of the quicksilver to that point, will be able to make equally good Sugar. This discovery, in fact, has stripped the manufactory of Sugar, of all difficulty whatever, and in my immediate neighbourhood, gentlemen are now making good Sugar, who have heretofore had great difficulties in the operation, and the only bad Sugar I have seen is from a plantation where the thermometer has not been introduced.

The discovery of Mr. M'Intosh is now patented; I feel no difficulty therefore, in communicating it to you, as I presume no one will use it without being willing to meet such moderate charge, if found as really beneficial as we hope it will be, as he may require for its use. In the Cane juices, as they come from the reed, there is mingled some portion of gummy mucilaginous substances, beyond the mere water and sweets which they may contain. To separate these foreign substances, refiners have used eggs, and blood, the French have used sulphuric acid, and animal charcoal, or burnt bones. Mr. M'Intosh tried all these substances, and he also tried pure clay, either in its dried state, powdered, or dissolved in some portion of the Cane juice, which, after being mingled in the receiver, with the Cane juice, was then, by the application of the usual quantity of lime, precipitated to the bottom of the receiver, with the fæcula, the gummy and other substances, that had been suspended in the juice. The philosophy of this operation seems, to my mind, distinct: pure clays are diffusible

through a great mass of fluid; they are tenacious in their nature, and they combine with that tenacity, ponderosity. They are, consequently, easily precipitated by the usual quantity of lime, and as in their general diffusion through the Cane juice the particles of clay attach themselves to all the floating substances, these substances are carried down with them: the Syrup becomes purer, and the Molasses discharges itself more readily from the Sugar. This at least for the present, is our opinion, but we are giving it a strict and rigid examination at all of our plantations, and if really useful, we hope that Mr. M'Intosh will be rewarded for his discovery, and not the less so, from its simplicity, and from the cheapness of the material he has employed. For the experience of all ages instructs us that we more often find wisdom by researches beneath our feet, than by explorements in the sky.

My own crop of Sugar this year, in consequence of the drought, is very small, but the quality very good. A friend of mine will be going on in the beginning of January, when I will transmit to you some samples of my own, with other samples of the neighbourhood. There is now erecting two steam mills in this quarter, to be applied to the manufactory of Sugar upon a large scale, and after twenty years of labour on my part, this subject is in repose in public opinion.

I shall before long transmit you an excellent paper upon Indigo, from the pen of General Floyd, the last gentleman who successfully cultivated Indigo in this country; his opinion is in accordance with my own, that Indigo will resume its importance in this country, and that when the watery particles contained in the mud as it is taken from the Indigo Vat, is dispersed by its being simmered for some hours in copper kettles. which is done in Bengal, American Indigo will be as valuable as the Indigo of Bengal, and it can be raised with greater ease, for the monsoon, both rainy anddry, interfere with their crop, and those who superintend the manufactory in India, not being permitted to hold real estate in that country, are, according to Bishop Heber, a very worthless description of persons, from whom the government of India have already withdrawn its patronage.

I remain, Dear Sir, yours with esteem, &c.

THOMAS SPALDING.

To J. D. LEGARE, ESQ.

Art. IV.—*On Guinea Grass.*

Dear Sir,—On my return from the country I received yours relative to the Guinea Grass; I fear you have expected more from me upon the subject of the cultivation of this Grass for the "Agriculturist," than I have ability to furnish you, though, believe me, inclination is not wanting to do all in my power to further the work, which, I think, if properly supported, is calculated to be of great benefit to us. I with pleasure, however, give you my practice and experience.

I plant the seed early in March, if the weather is mild, upon very strong rich land, in trenches about four inches wide, and one deep, and about a foot apart; the seed is well scattered in the trench, and covered light—it will soon be up, and about the first of May you will have an abundance of plants ready to put out.

The plants are taken from the seed bed as soon as they are five or six inches high, and set out in rows fifteen inches apart, from centre to centre, and a foot apart in the row if the soil be rich and strong; and nearer if poor, as it will branch or shoot out in proportion to the strength of your land.

It should be kept clear of other grass, and the ground occasionally stirred about it until the first cutting, which will be early in June, if the land is good and the season rainy, for it delights in wet weather.

I cut it about eight inches from the surface of the ground, and when the grass is about two feet high—that is, two feet above the eight inches of stubble, I generally get five cuttings during the season, but have got six and seven.

As this grass is killed by frost (the *only disadvantage* attending, or that can be named against it) it is requisite to preserve the seed every year, to do which experience has taught me that the most certain and less troublesome mode is to select a spot, after the first cutting, for a seed bed, which must not be touched until just before a frost, when it is dressed up, as herein directed. I will suppose a person wishing to cultivate one acre of grass the next year—I would for that quantity have my seed bed twenty feet square, the grass upon which, by the last of August, will

have attained its full height—eight or nine feet, and be fully out in seed, which will continue to put out and drop seed until a frost. About the 1st of November, I cut the grass upon the seed bed just above the ground, pull up the roots, shake off the dirt carefully, dig the bed about four or five inches deep, rake it quite level and then lay the grass or stubble which was cut from the bed, and which will cover it completely, carefully over the bed, to protect it from frost: in this situation let it remain till the next spring, and when vegetation is pretty well advanced, remove the covering of old grass, and you will find the bed well stocked with young plants, and you will have a succession of plants getting up until late in the spring, according to the depth the seed was turned in when the bed was dressed. If you wish to gather seed, to propagate this invaluable grass among those who are too distant to get the plants from the seed bed, I have found the following to be the best method: when the seed is well put out, take a basket at mid-day, when the weather is fine, and gently shake the tops of the stem over the basket, when none but the ripe or mature seed will fall into it; but it is very tedious, as the seed ripens irregularly, and drops immediately as ripe.

I have never myself, made Fodder or Hay of it, but am perfectly satisfied, that it would yield for that purpose more in quantity than any grass now in cultivation; nor do I think the quality would be inferior to the Clover or the best grass. Certain it is that when given in the green state either to horses or cattle, it is devoured with as much avidity as any grass yet known among us, and although the stem is large it is so tender that not a particle is rejected by even the most delicate and pampered horse.

Respectfully, I am, Dear Sir,
Your obedient servant,

J. D. LEGARE, ESQ. B.

ART. V.—*On Agricultural Prejudices; by* G. J. F. CLARK.

To the EDITOR of the "SOUTHERN AGRICULTURIST."

Sir,—As prejudices frequently operate to the injury of our Agricultural affairs, in a greater degree than ignorance,

inasmuch as they are errors grown stubborn by habit, to the exclusion of truth; I am of the opinion, that we cannot do better than in attempting to expose, or, at least, weaken by questioning some of them.

ART. 1.—Whether the Southern part of Florida is susceptible of producing Coffee on a large scale, is a question of much importance to the United States. Prejudice, here, operates strongly; but with whom? Those who never having seen that country, or know its peculiar circumstances, take into view only its latitudinal position; and those who are unacquainted with the character of the Coffee plant are equally as incapable of judging.

From the mouth of Indian River to Cape Sable, the southernmost extent of this peninsula, we have a front of about one hundred and sixty miles, supported by a track of country of about nine and a quarter millions of acres. Deduct, then, largely for sea-beaches, water-courses, salt-marshes, &c., there remains fully seven millions of acres; which I have frequently termed, to the ridicule of others, our Coffee region. These, though not within the tropics, lie so near to that of Cancer, that with the modifying influence of two adjoining gulphs, one on each side of a comparatively narrow tongue of land, the climate is assimilated to that of the Havana, on the north side of Cuba. Add, then, that in Cuba, their Coffee succeeds best on elevated ground, because cooler than their plains, and it results that they ascend their hills there in search of such a temperature as we have on our plains. The tracks of nature, evident in the indigenous productions of our soil, fully warrant this conclusion. The Mangrove, Lime, Hicacaco, Mansanilla, Cochineal Pear, and many more perennial plants, decidedly exotic in other than tropical climates, are indigenous there. And, at Cape Florida, about some old settlements, a few Coffee trees have been seen to grow finely. Several articles of our gardens and fields, that at St. Augustine are annuals, become there biennials and perennials; and others reproduce themselves, about old settlements, for a long succession of years, that must be replanted here every year.

I do not mean to say that cold never enters that region: very late cold has been known to injure the Coffee crop in

Cuba. And where is it that culture of every kind—aye, every adventure of man, his own health, and even life, does not suffer by casualties? But I hold that it does not arrive there at a period, or in sufficient intensity to kill this plant. The Coffee, like all other deciduous plants, is in a state of torpor during the winter months; in which time a considerable degree of cold cannot injure them; and when the spring has aroused them from their winter sleep, no cold can occur there that would be fatal. Nature, we see, generally selects for northern climates from among her deciduous classes, because less liable to casualties of season; placing her evergreens in greater numbers in the southern. The most hardy trees of a northern climate, that in their torpid state stand the severest cold unhurt, would be seriously injured, if not killed, were they assailed by it under a full suit of young leaves and flowers. Thus all plants suffer more from the state in which the cold meets them, than from the intensity of the cold itself.

The next objection, is the land and its character; because Vignole's Map dismisses a considerable portion of that I have marked out with, *Inundated region*. We have much reason to be obliged to Mr. Vignole for having given us so good a map; it is by far the best we have had, particularly of the interior of Florida. He necessarily, in some instances, drew, as do all map-makers, from the best authorities he could obtain. But the land is there; and of all our various classes; and capable of producing, or being made productive: no rocks nor mountains, nor sandy deserts, nor permanent inundations occupy the surface. And, above all, we have the great agricultural desideratum, climate.

Unfortunately, in all communities, the least competent and most indolent form a majority that usurps the right of scanning, on arbitrary principles, the approach of every new invention and improvement; therefore, opposition, or at least discouragement, is to be looked for of course. Rice, Indigo, Cotton, Cane, each had its share; Cuba Tobacco is yet under the ordeal; it would be wonderful that Coffee should escape. Sweet Orange trees, in the northern parts of Florida, must have met their portion of discouragement; and what are the facts of their situation at this day? That though an exotic, originally from a far southern climate, not susceptible of being naturalized in

this, where the sour and bitter sweet are indigenous, (evident in their dependence on man for existence) they vie with all the world, even the spice trees of the East, in their sure and valuable return to their owners.

ART. 2.—The moon is the goddess to which many in this twenty-eighth year of the eighteenth century make their first and best bow in agricultural operations. Planting, transplanting, pruning, ingrafting, and so forth, must be done at certain of her periods and phases; and they must act on those vegetables that bear their fruit below ground, at opposite phases to those that bear them above. These *essentials* neglected will, they believe, mar all advantages attendant on good soil, seed, season and culture.

These, say some when attacked by reason and ridicule, were the guides of our grand-father's great-grand-father; they can do no harm if they do no good; (like quacks' nostrums, frequently containing a poison) and, that the fifty-two quarters of the moon serve to mark periods in which such works should be done. But the moon and seasons do not go hand-in-hand: Spring, for instance, is in some years a month later than in others. Such persons, then, though they see around them the hands of nature, employed at once in ten thousand places, opening up or keeping closed the buds of Spring, will not move until Cynthia gives the nod. And from this cause I have seen profuse and opportune showers pass unheeded for two or three weeks, waiting on the moon, and then those things done late and in dry weather, which ought to have been done more early and in wet. A cause quite sufficient in itself to superinduce serious and continued injuries throughout a whole crop. Certain it is, that the loss of a shower of rain in setting a crop, independent of so much time lost in its progress to maturity, is not to be retrieved, however smilingly Madam Lunar may shine on it through all the rest of its growth.

Indeed we had as well get rid of all the magical influences of our satellite, that have been handed down to us from those days, in which each nation believed the world a plain, and itself the centre. Even the physical influence we ascribe to it miserably agrees with the atom of space she occupies in our solar system.

ART. 3.—A phenomenon in vegetable propagation, probably a resuscitation from the bowels of Pompeii or Herculaneum, has got afloat and is gaining ground: as, assuredly it will for a while, from its novelty and our propensity to credit the marvellous. This is, that all propagations made by incision (ingrafts, cuts, or buds) will live no longer than the parent stock from which they were taken; while seed from the same plant form a new and integral subject, that will go through the whole amount of years assigned by nature to its species: that is, it will not die until its own time comes, and not because its parent died, like the tree produced by the ingraft, bud, or cut.

Now, how the tree produced from a seed is to be exempt from the diseases of its parent tree any more than that obtained by incision, admitting that the contamination followed at all? or how either of them are to be affected by the after age, infirmities, or death of the parent, after being detached from it and having become new subjects on their own footing? involves two questions, either of which would be a master-puzzle to all the philosophy of man as compactly arrayed as a Grecian phalanx.

This we know—that the propagation of fruit trees by incision is so far preferable to that by seed, that two, three, four, and in some kinds more years, are saved in the time of getting fruit from them; and the quality of the fruit to be obtained can be relied on; and then improved by reiterated ingrafting; while, at the same time, we know that besides the more tardy progress of the seed-trees to a fruit-bearing age, no reliance can be placed on the fruit while the winds spread through the circumjacent air, the fecundating farina of thousands of trees and plants of all kinds; and the bees, booted with this very farina, rummage and rifle alike all kinds of flowers, and at remote distances.

Scion and seed, when taken from their parent stock, and rooted in the eath, or united to an adopted stock, are, we plainly see, alike complete reproductions that go through all the changes and gradations from infancy to fruitful age; with but this difference, that as the seed brings forth a younger subject, it requires more years to complete its progress. Whence, then, can there be derived any dependence of one or the other on its parent stock, that it must die when the parent dies? And, if it did at all exist, how is one to be exempt from it any more than the other?

If this faithful dependence did hold in both, the world would long since have been like the deserts of Arabia, without vegetables, consequently without animals. And if it were true in but the one to which it is attributed, we, Mr. Editor, would never have been acquainted with the Corinthian Grape, the Fig, and numbers of our most delectable fruits and flowers, obtained by incision and hybridizing.

ART. 4.—So much disposed are very many of us to let others think for and lead us, (an evil arising from mental and constitutional indolence) that it is nothing strange we should meet with absurd theories and see them followed unquestioned. No matter who it is that will give out a new set of opinions, (if handsomely dressed,) nor what his subject, he will not want for hearers, and will make converts. A lamentable fact in point is within my own knowledge.

A gentleman of much respectability, who resided in this city, and owned a valuable orange grove, had obtained a new work on agriculture, in which was a recipe for a plaster to cure the decayed bodies of fruit trees. All of his finest trees wore large cancerated gaps and hollows in their bodies, occasioned by a long course of neglect. The cause had been removed, and the disorder had ceased. They remained disfigured, but vigorous and very valuable; when, pleased with the novelty of the recipe and fair promises of the author, he wonld fain have their ill-looking gaps filled up with sound wood at so cheap a rate. The ingredients were, fresh cow-dung, lime, ashes, and burnt bones, mixed with water to a consistency convenient for spreading with a trowel. The dead but firm wood was all to be cut away in order to bring this plaster in contact with the live wood. The virtues of this plaster were, first, to exclude the rain and air; second, to regenerate the live wood until, by growing out, it filled up the cavity; and, thirdly, to nourish the tree.

Now, let us for a moment examine the nature of those ingredients. In the first place, they were all absorbents, not a resinous or oleaginous article among them, consequently could not keep off the air and water from killing the live wood farther in. Secondly, though they had all been impervious to air and water, when did nature give to wood those granulating and plastic qualities necessary to its growing out and filling up the wound, as animal flesh

does?—The swelling of the young wood, or sap, sidewise, will, we know, force out, or cover over; superficial longitudinal decays or wounds; but not so with those that traverse the pores of the firm wood. The cut of an axe in the body of a tree, when no chip is taken out, so that the walls of the wound meet again immediately to the exclusion of air and water, the outer young wood, or, rather, inner bark, will grow over this wound presently, and the progressing diameter of the tree will bury it deep; but the walls or sides of the wound, though laying in close contact, and in their natural position, will never adhere: An evidence that wood has not, in the smallest degree, granulating powers. Thirdly, all those ingredients are good manures; and would have good nutritive effect at the proper organs (under ground among the roots) but how were they to nourish the tree by plastering them on the wood of the body? He might as well have recommended the application of a beefsteak to a hungry man's cheek, or the calf of his leg.

But, being prejudiced in favour of a new and dashing work, and not thinking for himself, his grove of fine trees, that would have continued bearing beautifully for ages to come as they stood, were, at much labour and expense, taken through these surgical operations. The results were, that, becoming so much weakened by cutting away, the next equinoctial gale brought many of them to the ground; others, cut so much to a shell, perished in a year or two; and the few that remained (none were improved) had their wounds increased from a pint to a gallon.

A gentleman of fine education, wealth and advanced age, told me he had been advised, in order to obtain good Cabbage seed, and with the pecular character of not degenerating in warm climates, to transplant full made Cabbages upside down: that is, to bury the head and leave the roots out; "but," said he, and quite seriously too, "they all rotted."

ART. 5.—A prejudice like the following, strengthened by age, and so extensively received as a fact, it would be hopeless to assail, was not the evidence so near and conclusive. This is, that fruit of different qualities, growing near together, affect each other by admixture; or, in other words, become mungrelized. In some parts of Europe, this is so conclusively believed in, that a second

kind of Grape is not allowed in a vineyard; under the impression, that even one would contaminate the whole. Plant two Grape-vines in the same place, chosen for their greatest diversity of colour, size, shape, flavour, entwine them; bring their bunches of flowers in contact; and impartial judges will find no difference whatever in their respective fruit; not even in the colour, the first and most prominent mark of admixture. The seeds will produce hybrides forming a new variety of Grape. In ears of Corn we see distinctly admixtures in grains, sometimes in the whole ear; but, recollect, that Corn is itself the seed; and was that seed enveloped in a fruit, that fruit would, in no degree, partake of the foreign influence. I am quite satisfied that plants, once formed, imbibe no change in their appearance or character more than those universally, but slightly, consequent on climate, local situation, and culture; and that the fruit, which is the matrice of the seed, is no more susceptible of change than any other part of the plant. And this order of things holds good in the animal as well as the vegetable kingdom. I have now fifty varieties of Grapes growing but a few feet apart, trained and training up to the same arbor, and I nothing fear but that they will produce their fruit as distinct as though they grew a mile apart. There will doubtless be in the plants hereafter produced from their seed many mungrels.

Nor should we, in all cases, deprecate an admixture when we are satisfied that the subjects from whence it emanates have no obnoxious or deleterious qualities. The bitter Calabash, for instance, which, in addition to its very offensive taste and smell, contains a powerful emetic quality, would make a bad mixture with our Melons and Pumpkins. We know that the varieties of our fruits and flowers, and even our domestic animals, have been in this way, both by art and accident, greatly extended, and much improved. China, for instance, boasts in the Rose, and Holland in the Tulip, hundreds of varieties more than nature originally made. And, indeed, once we have so far digressed from our course, to the invasion of natural philosophy, why not intrude a little farther to remark, that it has its influence on mankind: Great Rome rose great from an amalgamation of nations: and so did Great Britain: and so does Great America.

(To be continued.)

ART. VI.—*An Account and Description of Bishop's Early Dwarf Prolific Pea; by* MICHAEL FLOY.

The letter given below was written at our request, and accompanied some of the Peas ordered out by us. An account of their origin is given in the first volume of the *Gardener's Magazine*, and from observations made by the Conductor of that work, in subsequent numbers, they are in high repute around London; supposing that they would prove an acquisition here, we have given the annexed letter.—*Editor Southern Agriculturist.*

"New-York, December 27, 1828.

Sir,—I send you the quantity of *Bishop's Early Dwarf Prolific Pea*, ordered by you, being of the same kind as presented by me to the Horticultural Society of this city. Agreeably to your request, I will give you a short account of its origin, peculiar properties, and mode of treatment. In the year 1826, they made their first appearance in London, having been sent, as I am informed, from some part of Scotland, where they were originally raised by a practical Gardener, of the name of Bishop. In the year 1817, so great a reputation had they obtained in the neighbourhood of London, that they were readily sold by the nursery men there at *a guinea a pint;* and in the spring of that year I received a small portion of them as a present from an eminent Horticulturist, who, in the letter accompanying them writes as follows: "These Peas are making a great noise here, and knowing they would be highly acceptable to you, I have, with some difficulty, procured you a small quantity: its peculiar excellences appear to be these—its great productiveness, equalling if not surpassing any variety hitherto known; its earliness and its remarkable dwarf habit, seldom attaining, even in the best soils, the height of twelve inches, which of itself would make it a most valuable acquisition, more especially for small gardens." In addition to what is here stated, I remark from my own experience, that this Pea fully realizes the description here given, and the following appears the most judicious method of treating

them: They should be planted three, or at any rate two inches apart in the rows, as from their dwarfishness and spreading habit they do not do so well if sown closer, hence it is obvious there will be a great saving of seed, as a pint of these Peas will go as far as two or three quarts of any other, sown in the usual manner. They commence blooming when not three inches high, bear most abundantly, and are very fine eating. If a few were planted weekly, a constant succession of Green Peas might be obtained all the summer and autumn, as from the habit of their growth they appear better calculated to withstand the heat of an American summer than any variety with which I am acquainted. I have still a few quarts left, which are offered to those desirous of cultivating an excellent vegetable, at one dollar per quart. Persons at a distance, by remitting the cash by letter (post paid) will receive them by any conveyance they may designate.

MICHAEL FLOY,
Seedsman, &c. New-York.

To JOHN D. LEGARE.

ART. VII.—*On the Cultivation of Bearded Rice; by* WILLIAM MAYRANT.

"Stateburg, 30th Dec. 1828.

Dear Sir,—When I had the pleasure of seeing you on the Hills, in June last, I promised to give you the history of the Bearded Rice, which we have had lately introduced in this neighbourhood, as well as the result of the experiments I was then making in the cultivation of thirty acres I had then planted on high land.

This Rice was brought here by Mr. Wm. Genald of this district, who, travelling to Pensacola, in its vicinity saw a small field growing on the high pine lands of that country. From its rich, luxuriant appearance (being five to six feet high, and bearded,) he mistook it for Barley, and was induced to ride to the dwelling of the owner of the field, and to his surprise found it to be Rice. On his return from Pensacola he procured a parcel from the owner, who told him

that it had been lately introduced there, that it came from South-America, where it grew wild, that it was much greater in product than the Rice generally cultivated, that some, which had been cleaned out and sent to Pensacola had brought one dollar per hundred more than the common Rice of the country. Mr. Genald, on his arrival here, having no place to cultivate it, gave three pints, being all he had, to my much esteemed friend, the venerable James Span, sen. who planted one pint in his garden, from which he reaped not a grain; one quart he planted in a low spot near a branch—he never was able to water it: from this he gathered eight bushels and a half of good heavy Rice; the pint planted in the garden, his poultry destroyed every seed of it; the part planted on the field was much ravaged by birds, yet the product was as above. The second year after the first cultivation, I procured from him six bushels of the seed. The moment I saw it, it struck me it would be a valuable acquisition; I therefore immediately sent one pint to Colonel William Alston, sen., one to Mr. T. Ford, of Peedee: to William Washington, Esq. I sent four quarts and better, knowing him to be a zealous advocate for agricultural improvements. Mr. Ford, I am told, is so highly pleased with it, that I understand from a friend of his, that he wishes to procure seed for twenty acres. Mr. Washington, I have heard, approves highly of it. I have not heard directly from those gentlemen, the result of their experiments. I planted about thirty acres with somewhat better than five bushels of seed: twelve acres was in new high land, cleared since February last: three acres of it had been cleared the year before; from these three acres I believe I made the most that was gathered from the twelve acres, which was injured by the growing trees and sourness of the land—it was never grubbed, nor had any roots been taken out—only the trenches made by the bull-tongue plough, at three feet apart, and every eighteen inches, eight or ten grains of seed were dropped. The three acres that had been cleared the year before grew off rapidly—closed the rows, and there was no riding through it without injuring it, was from six to eight feet in heighth, and tillered greatly; the other nine acres was equal or superior to any growth of Rice I ever saw. Remember I am no Rice planter, having never before planted any but once, and that for table use. I have just finished threshing

out the twelve acres; the product in clean, winnowed, is two hundred and sixty-seven bushels. The loss has been considerable, from stealage of my own and neighbouring negroes, as well as having no hard-trod barn-yard, (it being a loose and sandy soil which had been in cultivation this summer,) to cock and stack it on; I have sent and used fifteen or twenty bushels of it before the threshing, which I have just finished. The twenty acres was a piece of rather low ground, being a valley between two rising fields, and in a wet season I hoped I might command water, but the dry August prevented; it was ditched to guard against too much moisture. The land had been in Cotton for about six or seven years. This was planted three feet by eighteen inches, and in many parts not above six or seven grains in a chop; it grew most luxuriantly. Many planters who came to see it, declared they had never seen such luxuriant vegetation: in many parts of the field; it was from eight to ten feet high, and so interlocked that you could not ride through it without great injury. One person declared fifty head of cattle might be in it undiscovered. It never lodged, nor did I perceive that it shed in the field. I left much of the stubble three feet high after cutting. One person who had seen much of Rice-planting in his early day, declared he had seen Rice, not near as luxuriant, yield seventy bushels per acre. The Rice was not planted until late in April, it of course did not head or blossom until late in August, or the beginning of September; it was then very dry, Corn would not with such a season have yielded but small and trifling ears; a considerable part of this field took a blight, but I believe not so much from drought, as some very cool and chilling nights we had towards the last of August or first of September. About the same time I recollect seeing some letters in the papers from the tide-swamps on Peedee. I had a small spot of land that run in a valley from the adjoining hills, that did not produce Cotton six inches high; there, Rice filled well, and was good heavy grains; the Rice grew on it about two to three feet in height—had it been the drought that blighted it, this spot of land would not have produced a single grain. Near one-third of the twenty acres blighted, I suppose that part which did not blossom as early as the forwardest, and was in that state when the cold nights in the last of August came: it blighted in veins and spots, such as I had in the

Cotton fields early in the spring. Not being acquainted with the cultivation of the article, I may have ploughed it after it was in that state which is called bellying or swelling, to put out the ear. Notwithstanding the difficulties which the twenty acres laboured under, (I have now nearly done threshing it) my Overseer informs me that he is certain to get eight hundred bushels from it. From my own observations, and the actual measurement of the twelve acres, I think he is correct. When I first got the seed from Mr. Span, I weighed it with the best Gold-seed Rice, obtained for seed from the neighbourhood of Georgetown, and found that ten grains of the Bearded weighed fourteen of the others; the heads were generally from ten to twelve, some thirteen inches in length. On one head, the number of grains was counted, it numbered three hundred and forty. A hand with a common pestle and mortar, will beat out two bushels of it in the time he can one of the Gold-seed. I think it will yield more of clean Rice to the bushel of rough, than the Gold-seed, though I have never as yet made the experiment; it has never as yet been used in any but two families, Mr. Span's and my own. I find it whiter and a more pleasant Rice to the taste than the other. I have used in threshing the Scotch machine for threshing Barley, I got one built for threshing my Wheat crops, I can do from one hundred to a hundred and fifty bushels a day with it; it is cheap, and can be worked with one mule, though I have put two very inferior ones to it; you will find the machine described in the Encyclopædia Brittanica, American edition under the article Threshing. I planted fifty acres of the Gold-seed Rice in the same quality of land and had the same cultivation. The Gold-seed is not yet threshed, but if it makes half the quantity of the Bearded, it is as much as it will do. It is highly probable Mr. Washington will furnish you with some observations on the culture and product of the large Rice, as I sent him what seed I could spare. The straw I at first apprehended might be harsh, from its appearance while growing, but I find it cures as soft and tender as that of the Gold-seed. My horses and mules eat it in preference to fodder or hay. I directed my Overseer to weigh a bushel of the Rough; he just informs me it weighs forty-seven. What is the general weight of the tide swamp Gold-eye seed, I know not.

I remain with respect and esteem, Your's,

WM. MAYRANT.

P. S. Since writing the foregoing, I find that I am in error as to the quantity which this Bearded Rice has yielded, and which I wish to correct. I had been in such ill-health for some time before, that during the threshing of it, I did not go into the barns where it was threshing but very seldom; while I was writing, my Overseer informed me that he believed there would be fully eight hundred bushels produced from the field of twenty acres, but when winnowed, it did not turn out more than four hundred bushels of good heavy Rice; there was more than eight hundred bushels in bulk, but I mentioned to you that that field had taken a blight when in blossom: there was, I believe, more than would have made five or six hundred bushels of grain, or heads, that had no grain in them at all, and went off from the winnowing. This reduced the quantity to the amount mentioned. The Gold-seed blighted three times as much as did the Bearded, and from this cause the Gold-seed, when threshed, will be very short. I had an acre of each planted near each other for trial, the Bearded grew much larger, and only partially blighted, while the Gold-seed did so in a three-fold degree. I harvested them and put them in separate cocks, preparatory to throwing them into large ricks, but my driver, in throwing them, mingled the Gold-seed with the whole body of that Rice, and I had not an opportunity of testing the difference of the product when threshed. The product of the Bearded Rice must not be judged of by the experiment this year, as the drought and blight must have cut it short by better than one half. One of my neighbours planted one acre and a quarter of the Bearded Rice in a piece of sandy savanna, which he expected to be able to flow—the drought prevented him from doing so; about the 1st of September, he saw my twenty acres of the Bearded Rice, and told me, from neglect and drought, his was trifling when compared to mine; yet, he threshed out from forty to forty-seven bushels from the acre and a quarter; his, from some cause, either a protected situation, or not working it as late as mine, did not blight. It is my firm belief, and also the opinion of several men who had been accustomed to the cultivation of Rice, that the field of twenty acres would yield sixty bushels of good heavy Rice to the acre, although it had no rain from the time of shooting out the ear until it ripened. There appeared one peculiarity in this Rice—that

it produced no light grains, they were either heavy and well-filled, or nothing at all in them; quite different from the Gold-seed that I planted then, many, very many grains were of half the weight and size of the full ones.

With much respect, Yours, &c.

WM. MAYRANT.

ART. VIII.—*On the Cultivation of Tomatoes; (Solanum Lycopersicum); by the* EDITOR.

The fruit of this vegetable is justly in high repute among us, and to have it early in the season, is a desirable object with most of our gardeners. To effect this, the seed is sown in the last of this month or beginning of the next, on warm and sheltered borders, and protected whenever there is apprehension of a frost: but much the best plan is to sow it on a hot bed the last of January or commencement of February, and from thence to transplant the young plants into the open ground, when the season is sufficiently advanced, by this method, it may be had a month earlier than by the plan usually pursued.

As hot beds are not in common use among us, it will not be irrelevant perhaps, to give here a few directions for their formation and management. These will, however, be concise, as it is our intention to treat more fully on this subject in some future number. The best and generally the most convenient material for a hot bed is stable litter, that is, the litter from the stable mixed as it usually is with the dung of the horses. This should be thrown into heaps, a short time before it is wanted, in order to prepare it for making the beds, and also that its most violent heat may pass off. Having been turned over once or twice, proceed to mark off the dimensions of the bed, allowing it to be a few inches wider each way than the frame. Next, lay the manure on, carefully breaking the lumps and mixing it well as you proceed, the bed should, at this season, be about three or four feet high, when it has reached this height, place on the frame and lights, to draw up the heat which will soon be effected, the steam, as it rises, must be per-

mitted to escape, by raising one of the lights. Two or three days after, place over the bed six inches of good rich soil, which, however, must not be in a *wet* state, as it would be apt to cake at the bottom, and be otherwise injurious. The bed being now ready, may be sown with any seeds intended by the gardener; but, as our subject is the cultivation of the Tomatoes, we will treat of that plant alone. The seed should be scattered evenly over the bed, and covered about half an inch deep, after which the lights should be again put on. Great care must now be taken that the heat of the bed does not destroy the vegetative principle of the seeds, and even the plants themselves, when they come up. In nothing is the young gardener more apt to fail than the proper temperature of his beds, erroneously supposing that he cannot obtain too much heat at this season; he is very apt to keep down his glasses, and consequently increase the heat of the beds to an injurious extent. This must be carefully avoided; a moderate growing heat is all that is wanted, and whenever the bed is found very warm, the heat must be permitted to escape, either by lifting up the back of one of the lights, or sliding it down. This will be found to be very necessary in the first stages of forcing, for the heat arising from the beds, is then most violent, it of course decreases as the fermentation subsides. It will also be found necessary to give more air when the sun shines, than in cloudy days, the beds should therefore be daily examined, and the heat regulated, by permitting more or less air. It will rarely be found necessary with us to protect the beds from cold, yet still as such a procedure may be rendered necessary by a spell of severe weather, we will merely mention that this is done by placing either mats, or straw, or even bushes (such as pine tops, for instance) and, that it will be found more effectual when a little removed from the glass, than when in immediate contact with it. In four or five days the plants will show themselves over the bed, let them have fresh air every day, which will invigorate them greatly, and, I again repeat the admonition, that they be not kept too warm, by the one treatment, you will have fine healthy plants, by the other, weak and sickly ones. Should the beds be very warm, it is advisable, even at night, not to shut the lights down tight, but to leave a small part open, and hang a mat over, so as to exclude the cold air, and at the same time

permit the hot steam to escape. As soon as the plants have grown sufficiently large to handle, that is, when they have four or five leaves, let another hot-bed be prepared as directed for the first, and let them be transplanted into it, from three to four inches apart each way. This is done that the plants may become strong, and acquire a good set of roots, before they are finally transplanted into the open ground—if left thick, as they usually are on the seed bed, they would be drawn up and be weak and sickly, and when set out would in all probability die, or at least would be so slow in obtaining a good growth, that there would be but very little gained by the forcing. When pricked out into this second hot bed, they must be shaded until they have taken root, and they should be watered both in the seed bed and in this, whenever the surface appears dry: a little attention will show when they need it, and when it ought to be withheld. On this bed they are to remain until the weather is sufficiently mild to plant them out into the open ground, when it should be done, and protection afforded from the sun, for several days. No fear need be entertained of the plants being injured by being kept long in the hot beds; we have been obliged at times to keep them there, in consequence of the lateness of the season, until they were in bloom, and then set them out into the open ground, where they readily took root and grew as well as those of a younger age. Those who have not the fixtures to forward the young plants on a hot bed, should prepare a small piece of well-sheltered ground, towards the last of this month. The seeds should be sown very thin, or which is better, the plants when up should be thinned out, so that they may not be drawn up.

When the season is sufficiently advanced, so that there is no longer any danger to be apprehended from frosts, have the ground designed for them made very mellow, and well manured. The plants should be set out in rows four feet apart, and be about two feet distant from each other in the row. Should there not be manure enough to spread over the whole surface, it may be economised, by spreading it only in the rows, or applying it to the roots of the plants alone. Some set the plants out the same distance each way, and keep the ground level, we prefer having them in rows, and earthing them up, as they grow, and we are

satisfied that they yield more in this way than in the other. When they have advanced some little in their growth, and commence branching, as many bushes (such as are used for sticking Peas) should be stuck around each plant, as will be sufficient to support the various branches, it will be found that this is necessary, and that well supported they grow and bear better than when permitted to run at random. In the latter case the weight of the branches causes them to split and break nearly off, and they fall to the ground and rest there; the plants consequently become much injured by it. There is nothing particular in the subsequent culture, unless it is that they should be very frequently hoed, for although they will flourish, with as little attention bestowed on them as any of our vegetables, yet from the facility with which they form new roots, there is scarcely one which receives so much benefit from frequent stirring of the earth around them.

In some few situations the Tomatoes plant will continue in bearing until killed by a frost, yet generally they do not produce fruit with us more than two months, being nearly, if not entirely destroyed in that time by the heat of our sun. To have them all the season, however, is very easy. Successional crops may be raised, either from seeds, treated as the spring-sown crops are, or from cutting off the very vigorous tops of the full bearing plants, and setting them out, and treating them exactly as young seedling plants, they require at this season to be well watered, and protected from the sun until they have taken good root, which, under proper management, they readily do. By placing frames over them they may be had during the greatest part of the winter, and it would require but very little care or expense to have them the whole year.

J. D. L.

ERRATA.—In the last Number, page 31, line 19, for "and in our markets only for two or three months; in the whole year are they to be seen during the winter, and even until the crop, &c." read *"and in our markets, only for two or three months; in the whole year are they to be seen. During the whole winter and even until the crop, &c."* Page 32, line 22, for "Turnip-rooted small red Castlenandari, Green-topped Yellow-rooted, &c" read "*Turnip-rooted,—Small Red,—Castlenaudari,—Green topped,—Yellow-rooted, &c*"

PART II.

SELECTIONS.

ART. I.—*Outlines of Horticultural Chemistry, &c. By* G. W. JOHNSON, Esq. *of Great Totham, Essex.*

[FROM THE GARDENERS' MAGAZINE.]

(Continued from page 41.)

However varying in the proportions, yet every soil is composed of silica, alumina, lime, magnesia, oxide of iron, salts, and animal and vegetable remains. The most important consideration is, what proportions those are which constitute a fertile soil. The *beau idéal* of a fertile soil is one which contains such a proportion of decomposing matter, as to keep the crop growing upon it always supplied with it in a state fit for introsusception, yet not so superabundantly as to render it too luxuriant, if the object in view is the production of seed: but, for the production of those plants whose foliage is the part in request, as spinach, or the production of edible bulbous roots, as onions, which have a small expanse of leaves, so as to be almost entirely dependent upon the soil for nourishment, there can scarcely be an excess of decomposed matter presented to their roots. Spinach, on rich soils, will yield successive cuttings, the same as to asparagus: the latter, especially, demands abundant applications of nourishment to its roots; since, like the onion, it has little foliage and slightly fibrous roots, at the same time that, like the spinach, it has to afford repeated cuttings, which, requiring a repeated developement of parts, need abundant food, and that in the immediate neighbourhood. A soil with a just proportion of decomposing matter, which insures that it will be capable of

absorbing moisture during the droughts of summer from the atmosphere, as the most fertile soils are always the most absorbent, yet it must not be too retentive of moisture, which is the case in such soils as contain too much alumina; neither must it too easily part with it, which is a characteristic of those which contain an excess of silica. A subsoil of gravel mixed with clay is the best, if not abounding in oxyde of iron: for clay alone retains the moisture on the arable surface in too great an excess; and sand on the contrary carries it away too rapidly. It is, however, evident that to insure these desiderata in any soil, at all seasons, is impossible; and it is as manifest that a soil that would do so in one climate would fail in another, if the mean annual temperature of them should differ, as well as the amount in inches of rain which falls during the same period. Since, in the western parts of England, more than twice as much rain occurs as in the most eastern counties, or in the proportion of 42 to 19, a soil in the east of England, for any given crop, may be richer and more tenacious than the one required for it on the western coast. Alumina, or clay, imparts tenacity to a soil when applied; silica, or sand, diminishes that power; whilst chalk and lime have an intermediate effect, they render heavy soils more friable, light soils more retentive. These simple facts are important; two neighbouring fields, by an interchange of soils, being often rendered fertile, which, before, were in the extremes of tenacity and porosity. From these statements it is evident that no universal standard, or recipe, can be given for the formation of a fertile soil, but one whose constituents approach in their proportion to those of the following one cannot be unproductive in any climate. It is a rich alluvial soil, which Mr. Sinclair, in his invaluable *Hortus Gramineus Woburnensis*, gives as being the most fertile for the grasses.

"Fine sand, 115; aluminous stones, 70; carbonate of lime, 23; decomposing animal and vegetable matter, 34; silica, 100; alumina, 28; oxide of iron, 13; sulphate of lime, 2; soluble vegetable and saline matter, 7; loss, 8; Total, 400."

I have already stated what chiefly constitutes a fertile soil; it may be added that, to constitute one eminently such, its earthy particles must be in a minute state of division, the more so the more fertile will it be. In the above

analysis 185 parts only were separable by siting through a fine searce, 215 parts were impalpable; whereas poorer soils will often have 300 parts coarse matter to every 100 of finely pulverised constituents.

In affording warmth to plants, the earth is of considerable importance, and the power of accumulating and retaining it varies as much in soils as the proportions of their constituents. Sir Humphry Davy found that a rich black mould, containing one-fourth of vegetable matter, had its temperature increased in an hour from 65° to 88° by exposure to the sunshine, whilst a chalk soil was heated only to 69° under similar circumstances; but the first, when removed into the shade, cooled in half an hour 15°, whereas the latter lost only 4°. This explains why the crops on light-coloured tenacious soils are, in general, so much more backward in spring, but are retained longer in verdure during autumn, than those on black, light soils; the latter attain a genial warmth the more readily, but part with it with equal speed. An experiment which I have often repeated upon light as well as tenacious soils with like success, demonstrates how greatly the colour of a soil influences the accumulation of heat. Coal ashes were sprinkled over half the surfaces of beds sown with peas, beans, &c. and on these the plants invariably appeared above ground two or three days earlier, obviously on account of the increased warmth; it being a well-known fact that dark-coloured bodies absorb caloric more readily, and in larger proportions, than those of a lighter hue.

Different plants affect different soils. Every gardener must have observed that there is scarcely a kitchen-garden but has some particular crop which it sustains in luxuriance far superior to any other garden in its neighbourhood, or to any other crop that can be grown in it. My own garden, without the preparation of an artificial soil, will not produce the common garden cress (Lepídium satìvum), whilst the raspberry is remarkably luxuriant. That the composition of a soil has a main influence in these peculiarities is certain. The nettle haunts, as it were, the footsteps of man, and clings, as poetry might urge, in very sociality round his dwelling. This plant will not flourish but in a soil containing nitrate of potassa (saltpetre), a salt always abounding in the neighbourhood of walls and places where there is calcareous matter. The rabbit warrens near Mildenhall,

in Suffolk, I have noticed frequently as abounding in nettles, yet it is a houseless waste of many miles' extent; but, still, nitrate of potassa is furnished to the soil by the urine of the rabbits, which contains potassa and lime, in very considerable proportion. These topics, however, belong more properly to a future communication upon manures, which I shall next proceed to, because these ingredients of soils are strictly artificial or adventitious. It is certain that a soil is often considered unproductive, and that unproductiveness attributed to some deficiency in its staple, which is caused by erroneous management. I have before stated an instance of tap-rooted plants being produced of superior size and form, by means of applying the manure deep beneath the surface. In another instance, some parsneps being of necessity sown in a poor soil, having turned in some manure by trenching full 12 inches deep, I would not allow any to be applied to the surface; but, at the time of thinning, I set half the bed out at an average of 12 in. distance between each plant, the other half at 9 in: when taken up for storing, the whole were alike perfectly fusiform but those grown at 12 in. apart were the finest, as $4\frac{1}{2}$ to 3. If manure had been applied to the surface, the fibrous roots, I calculated, would be multiplied at the expense of the caudex, to its much greater detriment, than by making the few usually produced by this root extend in length by enlarging the circuit of their pasturage. Again, a more siliceous, darker-coloured soil should be employed for the growth of an early crop of any given plant, than is required by the main crop; because such soil will more readily get rid of the superfluous moisture, and acquire a more genial warmth, two great desiderata for vegetation in early spring. On the contrary, in autumn, for a late crop of peas for instance, the soil should be more aluminous; because, in August, September, &c., atmospheric moisture, in the form of night dews, abounds, the foliage is therefore perpetually subject to alternate extremes of moisture and dryness, whilst the root is liable to a state of exceeding drought: the soil, therefore, should be rich, kept in a minute state of division by frequent hoeing, that moisture may be absorbed and more aluminous, that such moisture may be retained.

(To be continued.)

Art. II.—*Observations on the Silk Worm; by* W. B. Buchanan.

[FROM THE AMERICAN FARMER.]

(Continued from page 45.)

1st Age.—We will suppose the essay to be made with 1000 worms, which are as many as those who have not much time and space to bestow, can conveniently manage. When a quantity of eggs have produced, the paper should be spread out on a table, and a few twigs, or rather the extremities of the branches of the mulberry tree, with the leaves upon them, should be laid lightly on the worms. They will very soon collect on these, and should then be lifted, twigs and all, and deposited on a clean sheet of foolscap, which will be found to afford them sufficient space during what is called their first age. This paper may be laid on a common waiter, the elevated ridges of which will protect the insects from accident; though it is a valuable property of the silk worm never to wander unless in search of food, and if this be properly distributed about the centre of the paper that contains them, there is no danger of their abandoning it. They should be placed near a south or east window, so as to enjoy the light, but be protected from the sun or a current of air. The temperature of the apartment should be kept as near 72° Far. as possible, and the door or window opened occasionally when it exceeds this, or a little fire kindled if it fall much below it. They should also be remote from noise, from odours of every kind, the smell of meats, tobacco, &c., and would, therefore, do best in a room not used by the family. They would, themselves, be offensive in a chamber after they had obtained their third age, but not till then, though in France and Italy, the peasants have them in every part of their dwellings.

When, by means of the twigs, the principal part of the worms have been removed, they should have their first repast, which must consist of the tenderest leaves, cut fine, and so distributed, that the branches may be lifted off when they are forsaken for the fresh food. It will be necessary to feed them four or five times during the day, and once

before they are left at bed-time, or oftener, if they be found to consume readily what is given to them. An hour and a half is allowed them to finish their meal, and if this has been sufficient to satisfy them, they remain quiet and appear to sleep. If they are still restless, more leaves must be given, provided they have none remaining, or these have become hard and dry. A little observation will enable the person who attends, very soon, to understand their wants and the quantity of food they require—this will now be very small, and will not exceed a handful or two of leaves per day.

It is desirable that the leaves should be gathered a few hours before they are used, and very important that they be given free from moisture of dew or rain. It is well, therefore, to procure in the evening, what will be required for the following morning, and in the morning, the supply necessary for the evening, so that, if unavoidably wet, they may be spread out on the floor, where the air can circulate freely among them, and soon fit them for use. Drying them in the sun will not do so well; they may also be preserved fresh for several days, by laying them loosely in a large basket, or on a clean board or table, and placing them in a cool cellar, so that provision may always be made against a continuation of wet weather. ' An opportunity is afforded, a short time after feeding, of removing the decayed leaves, and the stems and fibres which the worms do not eat. This should not be neglected, and is the only cleaning they now require. It is also well to distribute the leaves, at each time of feeding, a little more widely, that the space allotted the worms, may be extended with their growth. When too many are collected upon one spot, a fresh leaf should be thrown them, and when they have attached themselves to it, they may be transferred to fill a vacant space. They should be distributed as evenly as possible over the paper, so as not to incommode or touch each other.

On the third day, they will be found to eat voraciously, and care must be taken to keep them properly supplied, by observing the rules already laid down. It is important to cut the leaves tolerably fine before they are given to the insects, as they feed principally from the edges, and are thus greatly facilitated in obtaining their nourishment.

Towards the close of the fourth day, many of them will be found inert, and on the fifth, they will probably be all in

the same condition: this is what is technically called their *mue*, (casting of the skin) and now will be seen, the importance of having had as many protruded at the same time from the egg as possible, as those last hatched will continue to demand food to the annoyance of the early ones, which now refuse it, and only require repose. A little must still be furnished, to maintain the former, until they fall into the same condition, and it is then only necessary to leave them perfectly quiet, and to observe that the temperature of the room is perfectly regulated.

The duration of the *mue*, is quite uncertain. In mine, it was hardly perceptible. Sometimes it lasts for hours, sometimes for days, much depending on the season, the treatment and the quality of the worms. It is, however, a critical period, and requires that every precaution should be taken to prevent their being disturbed.

2d. Age.—When the insects begin to revive, they should not be fed too soon. Time should be allowed for a large majority of them to be in a state to require food, before it is furnished, and several hours should be permitted to elapse, rather than lose the opportunity thus afforded of equalizing them. It will now be necessary to increase the space they before occupied, and the expedient of the twigs with leaves may again be resorted to, to transfer them to two clean sheets of paper, and to divide the stock between them—or on three, if they appear crowded; feeding, after they have reposed an hour or two, with leaves cut less fine than before, and removing the twigs when they have been deserted. The paper they left, with the litter remaining on it, should be removed from the apartment.

It is better now, instead of confining the insects to the centre of the sheet, to form them in a band along the middle of it, and to preserve this disposition of them during the rest of their treatment. It will enable them to be fed by laying the leaves on the outside of the bands, and require fewer to be sprinkled over them, which are always oppressive. These bands may be enlarged, by attracting the worms towards the edges of the paper as they augment in size.

They will require double the food they received in the first age, which may be furnished in the same manner; and when they fall into their second *mue* on the fourth or fifth day, the same precautions should be observed, only affording

them, occasionally, a little more air if the weather be fine and warm. Should the door or window be opened once or twice during this age, to reduce the thermometer a degree or two for a short time, it would have a beneficial effect, by producing a change of air in the apartment.

3d. Age.—The insects will now have attained a size that will require for them a further augmentation of space and food. A shelf should, therefore, be provided in a part of the room where they will be protected from the sun, a strong glare of light, or current of air. A corner, adjoining a south or east window, would be the most suitable situation. It may be raised three feet from the ground, and attached to the wall or otherwise supported. If eight feet long by thirty inches wide, it will be sufficient to contain the sheets on which they are subdivided through this and the following age, when another may be added to conclude the experiment. They would do very well on tables, where it is not convenient to erect shelves, and the papers might be dispensed with, placing them on the board, provided it be smooth and dry; but it would then be more difficult to clean them of their litter.

Four or six sheets will now be necessary, to which they may be removed, as before, when recovered from their torpor, and deposited on the shelf, beginning at one end of it and extending the papers along the middle, as the quantity is increased.

They will probably require shifting to fresh papers, once or twice during this age, which is very easily accomplished, by throwing them a few fresh and entire leaves, to which they will soon attach themselves, and thus afford the means of removing them. It may also be necessary to purify the air of the room, which is often offensive, from the quantity of decaying leaves, and the litter of the insects. For this purpose, the following simple process is recommended.

In a plate, saucer or other open vessel, mix together three tea-spoons full of common salt, and one of the black oxide of manganese, (to be had of any druggist,) and pour thereon two or three spoons full of sulphuric acid, (oil of vitriol,) carry the mixture round the room, that the gas (chlorine) which will immediately be evolved, may be freely circulated. Care should be taken to hold it at arms-length, and above the head, as it is pernicious if inhaled directly into the lungs, though perfectly harmless if breathed in an

apartment. A substitute for this, when it cannot conveniently be had, is vinegar, sprinkled lightly over the floor and shelves, or poured on a hot iron, that the fumes may spread through the apartment. By these means, with the occasional admission of air by raising the window to the full during the day, and leaving it up for an inch or two when the nights are sultry, the worms may be kept in good condition, and escape the evils to which they are liable in close and overheated apartments. Moisture is also very injurious to them; it will destroy them if brought in with their food, and renders them sickly and inactive when it prevails in the atmosphere. It is, therefore, recommended, to kindle a little fire, of light-wood, that will burn briskly with a bright blaze, if a long spell of wet weather should occur, even though it should be warm. They can better withstand heat than humidity, though every precaution should be taken to exempt them from either. In our climate, however, little is to be apprehended on the latter score, at the season of this culture, and the former may be obviated by the judicious admission of air at proper seasons. A piece of gauze or fly-net should be used, when the windows are up, to keep out flies and gnats, which are very annoying to silk worms.

On the fourth and fifth days, they have their third *mue*, and their food and treatment are to be regulated as on the former occasions.

(To be continued.)

ART. III.—*On the Management of Dairy Cattle—the Distribution of their Manure—the Advantages of Steaming Fodder—the Arrangements of one of his Farms—and his mode of accelerating the Production of Cream by Culinary Heat; by* ROBERT SMITH, Esq. President of the Maryland Agricultural Society.

Baltimore, February 9, 1824.

Dear Sir,—You have asked me to send to you a statement of the arrangements of my dairy farm, Orange, two miles from Baltimore. This I am about doing, because it is a part of my creed, that an unreserved communication of our respective practices cannot fail to lead to beneficial results.

The barn is constructed according to the best Pennsylvania models. The yard is to the south of it. On the east and west sides are cow stables, containing 110 well made stalls, and well

ventilated by a sufficient number of windows and double doors. In these stables are, in summer as well as in winter, several ranges of cattle, duly littered and properly secured, each by a chain and halter. At the tails of each range of cows, there is a drain made of strong planks—and so fixed as to receive all their dung and urine. These several drains have a sufficient declivity to carry all the fluid matter to their southern terminations, where they intersect similar drains, which convey all this liquid manure into a cistern fifty feet long. This cistern is so placed and constructed, as to receive not only the urine of the stables, but also all the liquid matter of the farm yard. In it there is a pump, by means of which its contents are pumped into a large hogshead, fixed on a pair of wheels drawn by oxen. To the end of this hogshead is attached a box pierced with holes, into which this liquid manure flows through a spigot and faucet, and is then sprinkled over the ground as the oxen move forward.

For the purpose of augmenting the quantity and of improving the quality of the food of my stock of every kind, I have established a steaming aparatus. It consists of a boiler and two wooden boxes, in which boxes is steamed the food. These boxes contain each eighty bushels. By this simple apparatus every species of coarse vegetable offal is converted into nourishing food, and all the ordinary provender is rendered more nutritious.

In the dairies near Philadelphia, it is well known, that sweet butter of the first quality cannot be made but from cream *quickly* produced from *fresh* milk, and that whenever the milk remains many days to produce its cream, such cream acquires an unpleasant taste that is imparted to the butter.

Since the month of January, 1823, my dairy people have been in the practice of always placing the pans containing the milk, in water simmering hot. The oily parts, which constitute the cream, are by such heat separated from the other ingredients, and then, from their specific lightness, they of course ascend to the top in the form of cream. Cream is thus obtained during the coldest weather in winter, in the course of about twelve hours after the milk has been taken from the cows. And the operation of churning such cream never exceeds twenty-five minutes. The milk pans remain in the hot water about thirty minutes. The butter has invariably been of a fine flavour, and of a beautiful yellow colour; and in the nature of things, it never can be otherwise, unless the dairy women should be utterly ignorant of the art of making sweet butter.

It may not be amiss to state to you, that the skim-milk under this process, is a very pleasant beverage. In summer and in winter, it bears the agitation of a carriage without becoming sour. And every morning, throughout the year, a person comes to the farm and takes from 250 to 300 quarts, for which he pays two cents per quart, cash, and on the same day he retails the whole among the people of the town at three cents per quart.

The hot water in which the milk pans are placed, is contained in large flat wooden vessels attached to a stove. The water is heated by means of a flat tube fastened to the side, and near to the bottom of each vessel, and introduced through an aperture into the stove. The heat of the stove affords the additional advantage of preserving in the dairy house, the requisite temperature during the winter season.

The dairy house is a stone building, consisting of three spacious apartments for the preservation of the milk, the cream, and the butter, and for the making of the butter. Two of these apartments are under ground and arched, and properly ventilated. To the south side is attached a convenient shed, with the requisite shelves, and with a copper boiler for the washing and keeping in good and sweet condition all the dairy utensils. In the front is a penthouse.

When I began, I really did not imagine, my dear sir, that I should have subjected you to the fatigue of reading so long a letter. Be this as it may, I beg you to be assured of the respect with which I am, sir, your obedient servant,

R. SMITH.

JOHN HARE POWELL, ESQ.
Corresponding Sec'ry. of the Penn. Agricultural Society.

ART. IV.—*On the use of Sand in propagating Trees, Shrubs, and Plants, from cuttings of them, by Mr.* THOMAS HAINES, *of Oundle, Northamptonshire.*

"The *finest white sand is superlatively useful to autumnal-planted cuttings of the more tender evergreens and shrubs.* In the business of planting cuttings of these, under-hand glasses, in the autumn, as well as the more hardy green-house plants, such as myrtles, faschia, roses, cistuses, germander, &c. no unmixed soil whatever can be found to bear a comparison with the *finest white sand;* as cuttings planted therein will be far more secure from mouldiness throughout the autumnal and winter seasons; during which times, the pots in which they are planted, generally remain standing up to their rims in the common ground, as the greatest preservative from frost; but in which situation they are more exposed to the ill effects of damp, than if standing on the surface.

"Although but little more than a knot, or a swelling protuberance, at the foot of each cutting, can be effected, during the first autumn; yet, on the advance of spring, they will early make roots, even without the addition of any other soil or article to promote their growth; and which young plants, being potted off, or transplanted in some way, as soon as they have formed sufficient roots; immense *quantities, from these small cuttings, may*

be thus annually propagated, by the help of the full-sized single hand-glasses! This process, however, will not extend to any other description of plants than the evergreens.

"In the propagation of the trees and shrubs alluded to by this process, it must be recollected, that the sand is to be considered no farther essential, than to strike or promote growth in the cuttings, sufficient for transplantation; as, on their being removed into another situation, in the next stage of the process, a mixture of suitable soil, with a proportion of sand only, will be requisite.

"We are not asserting that *yellow sand* will not equally apply in both cases, of planting cuttings of hardy evergreen trees and shrubs, both by summer-planting, in the open exposure, and autumn planting, under hand-glasses; but in all the experiments we have witnessed, and throughout the whole of our own practice, *white sand*, where it could be obtained, has been invariably applied, and most successfully.

"When we reflect, that *mouldiness* is the chief annoyance to cuttings of almost every description when planted under hand-glasses; every propagator should strenuously guard against it: and we know of nothing *so likely to discharge wet, and prevent undue retention of moisture, as sand alone;* and this, in preference to every other soil and compost.

"There are few soils with which sand cannot be intermingled to the greatest advantage in the various other branches of horticulture, as well as in the propagation of plants and flowers; it being admirably adapted, from its loose and open nature, to expand the pores of heavier, more close, and adhesive soils, thereby opening the entire mass of compost, and rendering it porous, and open to the free admission and full expansion of the delicately fine, and thread-like roots of plants and flowers; and in which we have most satisfactorily witnessed its singular and superior efficacy! We have known in various cases, plants to have been placed in soils most opposite and ungenial to their natures and constitutions, and thereby early inclining to decay; but which were speedily restored to their original vigour and complexion, by a proper and timely application of white sand.

"The sand which has invariably been found to surpass all others for general and special purposes in horticulture, is *a peculiarly soft and fine white sand, of an unusual smoothness, nearly as fine as flour-emery.*

"Where none other than the common white sand, which is unusually coarse, can be obtained, small quantities of the most fine can be sifted out with a fine sieve. [Or still better procured from it by a little washing over.—*Ed. Tech. Rep.*]

"Little argument can be necessary to convince the unprejudiced florist, gardener, or amateur, of the general utility of suitable sands being mixed with the more cold and heavier soils; thereby rendering them open and porous to discharge all copious

falls of rain, dissolving snow, &c. and which tend to overcharge adhesive soils with an undue proportion of moisture, and thereby to chill and starve the stock of plants and flowers."—*Tech. Rep.*

PART III.

MISCELLANEOUS AGRICULTURAL ITEMS.

Dry Rice of China.—Trials have been made to cultivate this variety in Italy, and it is thought by a French writer in "*Annales de la Société d'Horticulture de Paris, &c.,*" that it may be introduced into that country, in time, with advantage.

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The Cinnamon tree, *(Laurus Cinnamómum)* we learn has been raised in the open air, in France. M. Boursalt, made a report to the Horticultural Society of Paris, on the subject. The young plants had been kept in the Conservatory for a short time. They had been sent, at the time of the report, to Toulon, where it was thought the probability of succeeding would be greater.

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Apples, grown on dwarf trees, are brought to the fruit market of Paris in December.

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Siberian Rice.—In Russia, a kind of Rice is used which grows in Siberia, and is more succulent than that of America. It may be useful, and I am desirous of inquiring about it.—*Rusticus in Urbe.*

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A *very delicate Oil*, much used in Russian cookery, is expressed from the seeds of the sunflower, and is prepared by enclosing them in bags, and steeping them in warm water, after which the oil is expressed; this is actually as sweet as butter.—*Scotsman.*

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A *Strawberry* was gathered, on the 20th of June, from the garden of Mr. Norris, Brentford end, which measured 13¼ in. in circumference, and weighed upwards of 3 oz.—*Morning Herald.*

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The manufacture of Sugar from the Beet Root is said to be on the increase, and though the Sugar of the Colonies is always somewhat cheaper in the Netherlands than in France, is said to pay the manufacturer. It is stated, however, that a profit is more certain where the manufacturer is also the grower. A part of the advantage arises from giving the leaves and the refuse of the manufacture of the root to cattle, and from the quantity of manure produced.—*Jour. de' Agriculture des Pays-Bas.*

QUERIES.

CAMBRIDGE, S. C. January 5, 1829.

Sir,—Should you, as proposed in your December number, admit Agricultural Inquiries, it would be a favour to have an inquiry inserted of the success of the cultivation of Guinea Grass, (a grass highly spoken of in other parts of the United States, and in the West-Indies esteemed second in value to no other agricultural production); of the manure of its culture—the soil most favourable to its production, and its comparative value here.

Respectfully, &c.

JAS. B. MAYS.

[Mr. Mays will find in the present number some valuable information on the subject. But as that communication was written without reference to these queries, it does not fully answer them. We hope that they will be answered by some of our subscribers, who have succeeded so well with this grass.]—*Editor Southern Agriculturist.*

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LIVE OAK GROVE, January 6, 1829.

Sir,—Can any of your readers inform me of the relative advantages of using Salt Mud, and Salt Marsh, cut green. I should like to know whether any experiments have been made to test their value when compared with each other, or with other Manures, not only for Cotton, but for Provision crops, &c. I should like also to know the best way of using either of them.

Your's, &c.

D. B.

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CHARLESTON, January 20, 1829.

Mr. Editor,—Can you inform me whether any one near Charleston has made Sugar. I understand some very fine Cane was grown last season in the vicinity, and it would be gratifying to me, and no doubt to many of your readers, to know what has been the result. An actual experiment made among us, is worth more than all the theories and speculations.

I remain your obedient servant,

J. A. L.

[We believe that Sugar has not been made. The cane has generally been reserved for seed for the next season. From its growth the last year, there is very little doubt but that it will succeed with us, and that good Sugar will be made, and perhaps of the first quality, if Mr. M'Intosh's method be made use of.]—*Editor Southern Agriculturist.*

NOTICE.

☞ In consequence of our continued ill health, we have agreed with Mr. JAMES GREGORIE, the gentleman alluded to on the cover of the last number, to assist us in conducting this Journal for the present year. The Editorial pieces and observations will, as heretofore, be headed "*By the Editor*," and the writer designated by the initials J. D. L. or J. G.

JOHN D. LEGARE,

Editor and Proprietor.